

CONTACT 6

the user group newsletter for october 1979  apple computer inc.



Apple has an exciting new product called the Graphics Tablet. Many of you have already seen it at the NCC Show in New York and Sig Graph '79 in Chicago. The Tablet will be available in your local stores in November but for a preview of the device that created this picture of Albert Einstein on our front cover, turn to the next page

WHAT'S NEW, APPLE?

APPLE COMPUTER GRAPHICS TABLET

The Graphics Tablet allows the user to convert graphic data into digital information that may be processed by the Apple computer system. Shapes traced or drawn freehand on the tablet surface are instantly displayed on the system monitor. Once created, an image may be stored on the system disk for later retrieval and modification. Block diagrams, architectural renderings, logic diagrams, schematics, mechanical shapes and fine art are a few of the applications of the Graphics Tablet.

The Tablet system consists of 15-1/2 inch by 15-1/2 inch tablet (11 inch by 11 inch active surface area), a mylar overlay stylus, diskette software interface and documentation. Unlike other tablet systems, the electronics and power supply for the Apple Graphics Tablet are integrated with the Apple computer. This results in a low profile tablet, fewer boxes to contend with, easier hook up, and higher reliability.

The software support package is composed of a small assembly language fast draw routine and the master control software written in Applesoft BASIC. The fast draw routine is normally transparent to the user. It is activated by a call from the basic program and places the x-y coordinate pairs received from the interface into the data array specified by the calling program. Because this routine is written in assembly language, the system can process up to 120 coordinate pairs per second. This means that unlike other systems, the Apple Graphics Tablet will keep up with the fastest hand motion.

The primary user interface is provided by the Applesoft BASIC utility program. Macro functions,

selected by pressing the pen on the designated square on the tablet overlay, provide the user with a variety of utilities designed to decrease the amount of time required to complete the job.

Apple recognizes that these standard routines may not be optimum for every application. Since the standard software is written in BASIC the user may easily replace these functions with those written specifically for the intended application. The standard software package serves as an example of the way to expand or change the menu available on the tablet surface. A new mylar overlay is easily integrated into the tablet system using the menu alignment routine supplied with the system.

The interface provides the first level of support for the tablet. It relieves the user of many of the mundane calculations often necessary with less sophisticated systems. Cursor following (marking the position of the pen when it is proximate to the tablet surface with a cross hair cursor on the display), 0,0 coordinate origin positioning and scaling are all done with single commands to the interface. Only when the interface signals pen down is any action required of the host software.

Specifications

Digitizing area

- 11 × 11 inches (280 mm × 280 mm)

Overall size

- 15.5 × 15.5 × 1 inches (395 mm × 395 mm × 25 mm)

Controller card size

- 7 × 2.75 × .5 inches (178 mm × 70 mm × 13 mm)

Pen size

- 6 inches (152 mm) with 6 ft cable (1.8m)

Data rate

- up to 120 coordinate pairs per second

Coordinate system

- absolute cartesian with selectable origin

Output format

- sixteen-bit binary coordinate pairs

Interface levels

- TTL—provided by Apple interface

Scaling

- user selectable

Operating Modes —

Selectable from tablet menu:

Tablet modes

- RESET
- CLEAR
- WINDOW
- BG COLOR
- DELTA
- SOFT RESET
- VIEWPORT
- CALIBRATE
- REDUCER

Pen modes

- PEN COLOR
- DRAW
- LINES
- DOTS
- FRAME
- BOX

Command functions

- CATALOG
- LOAD
- SAVE
- SEPARATE
- SLIDE
- AREA
- DISTANCE

Power requirements (supplied from Apple power supply)

- 230 mA +5 VDC
- 40 mA +12 VDC
- 20 mA -5 VDC
- 40 mA -12 VDC

Software/firmware

- Control program in Applesoft BASIC
- Quick draw routine in assembly language
- Interface firmware in ROM

Minimum hardware requirements

- A2S1048 48K Apple II Plus or A2S0048 Apple II with A2B0009 Applesoft II firmware card
- A2M0004 disc drive with controller
- Black and white or color monitor order information
- A2M0029 from your local dealer

(More new items from Apple on page 7.)

EDITORIAL



FOR EDUCATORS . . .

The big news this issue is the establishment of the Apple Education Foundation, a not-for-profit corporation established by Apple Computer Inc. to further the development of education through microcomputer technology. The foundation has just reviewed the first group of applications for special project grants, and will be announcing the awards shortly.

The next deadline for submitting applications is December 10th. Projects that emphasize the development of new instructional

**By Roger Cutler
Education Specialist**

computing materials will receive priority consideration. Further details on the funding procedures may be obtained from:

Carolyn Stauffer, Administrator
Apple Education Foundation
20605 Lazaneo Drive
Cupertino, CA 95014

EPIC, the Education Program Information Center, is a special department of the Foundation that reviews and disseminates programs for the education community. Details can be obtained by writing Dr. Richard Ballard, EPIC Director, at the Foundation's address above.

HOME CONTROL

A new foreground/background system for home control called Apple Butler gives the APPLE II the capability of running two programs concurrently; one for the monitor and control of systems in your home, and one for any other task you care to do.

The Butler provides up to 16 analog inputs for temperature, light, moisture, or any other input data. Up to 32 switch inputs are provided for security or fire sensors, push buttons, magnetic reed switches, or on/off inputs or status indicators from controlled devices. Up to 32 output latches are available for control of output devices.

Several control modules will be available for the Apple Butler system. The first will be a system to control a solar water heater, a solar-assisted home heating system, a water-heating fireplace, or a combination of the three. Other systems are planned for control of automatic swimming pool equipment, sprinkler systems, home or commercial greenhouses.

The Apple Butler costs \$595 from your local APPLE dealer or from Home Computer Center, Inc., 2927 Virginia Beach, Virginia Beach, VA 23452, (804) 340-1977.

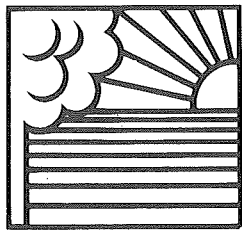
WRAPPLE YOUR APPLE

Protect your APPLE from dust, coffee spills and idle fingers with a WRAPPLE: a heavy duty, beige colored, vinyl dust cover. Or get the WRAPPLE II, a dust cover that will cover both the computer and one or two disk drives set on top of the computer. The WRAPPLE is \$8.95 and the WRAPPLE II is \$9.95.

To order, send check or money order to:

Henwood Enterprises, Inc.
1833 E. Crabtree Dr.
Arlington Heights, IL 60004

Or call toll-free (800) 323-7360 and use your Master Charge, VISA or American Express credit card.



OUTSIDE THE ORCHARD

(This column is written as a service to Apple customers, and contains information on products that we feel to be of interest to the user community. Apple Computer does not in any way recommend these products or warrant their suitability for use with Apple II or Apple II Plus Computers.)

10 MEGABYTES FOR YOUR APPLE

Remember when you got your disk? Finally, no more stacks of cassette tapes everywhere, no more waiting and waiting for tapes to load. But, since you have a disk you've thought of a dozen new uses for your Apple, so now you have stacks of little disks everywhere.

Well, there is a solution to your storage problem. No, it is not a disk filing system, although that might help. Corvus Systems has a 10 Megabyte fixed disk for the Apple. The system is compact, and you can attach four of them to your system.

The price is \$5390 for one, and \$3390 for an add-on disk.

Corvus Systems, Inc.
900 S. Winchester Blvd.
San Jose, CA 95128
(408) 725-0920

SUPERTALKER

SuperTalker is a peripheral system for the APPLE II that allows you to digitize speech, then output high quality speech through a loudspeaker under program control.

SuperTalker consists of three major components: the SuperTalker peripheral card, a microphone, and a loudspeaker.

Price is \$279, assembled and tested, FOB, Santa Cruz, CA.

For more information, please write or call:

Mountain Hardware, Inc.
300 Harvey West Blvd.
Santa Cruz, CA 95060
(408) 429-8600

APPLE-80

Dann McCreary has announced APPLE-80, an 8080 simulator and debug package for the APPLE II. Now any 16K or larger APPLE II can run programs written for the 8080.

APPLE-80 executes all valid 8080 opcodes and provides single-step, trace and run modes. All 8080 registers are displayed on the APPLE screen and can easily be modified. 8080 I/O port addresses are arranged in a table for ease of modification. Up to eight break-points may be set to facilitate program debugging. 6502 subroutines may be called directly from 8080 programs and 6502 routines may be embedded in 6502 programs. Vectored interrupts are also simulated.

The complete APPLE-80 package includes APPLE-80, APPLE-80 Manual, an 8080 demo program, and an APPLE-80 Reference Card. Priced at \$20.00 + \$1.50 shipping and handling, APPLE-80 may be ordered from:

Dann McCreary
Box 16435 — WA
San Diego, CA 92116

California residents add 6% sales tax.

SUPERCHIP

SUPERCHIP is a firmware ROM that plugs directly into socket D0 on your APPLE II to provide enhanced I/O.

With Superchip, your APPLE can display:

- Graphics and text freely mixed anywhere on the screen
- Full ASCII character set including lower-case letters
- 31 additional non-ASCII characters
- Reversed video on both input and output
- Rotated characters for vertical and upside-down printing
- Any character you can create in an 8 × 7 dot grid

When entering program statements or data, Superchip adds single keystroke editing capabilities to the APPLE:

- Move cursor up or down
- Clear the screen and home the cursor
- And more!

Superchip requires a minimum of 16K RAM (32K if you plan to also use Disk II) and supports the following functions:

- Integer BASIC
- Applesoft ROM card (RAM Applesoft is not supported)
- Printing through either the Serial or Parallel Interface Card
- A Character Editor, Disk II Interface and Text Editor are also available.

Prices are:

Superchip	\$99.95
Character Edit Cassette	\$19.95
Disk Interface Cassette	\$19.95
Word Processor Cassette	\$19.95

Shipping Charge (each) \$.75

From:

Eclectic Corp.
2830 Walnut Hill Lane
Dallas, TX 75229

CARD READER

Now, all you need is a standard #2 pencil, a card, and the new MR-500 mark sense card reader to quickly and easily enter data into your APPLE.

Here's all you have to do. One—program the card by marking with the pencil. Two—feed the card into the reader slot. Three—the reader automatically turns on, the card is fed through, and data is entered into memory.

The MR-500 is lightweight, compact, and plugs right in to your APPLE.

Price is \$750. For details, write or phone:

Chatsworth Data Corp.
20710 Lassen Street
Chatsworth, CA 91311
(213) 341-9200

EDITOR/ASSEMBLER

Software Concepts has announced an Editor/Assembler for the APPLE II.

The editor can create and modify integer BASIC, APPLESOFT, and assembler programs. Edit features include string search replacement, tabbing, block line moves, simple macros, and search windows.

The two-pass assembler can assemble up to ten disk-based source files and create a program listing and standard APPLE DISK II binary files. It uses eight character symbols, all standard 6502 opcode mnemonics, and has six additional pseudo opcodes. Operands may contain numeric parameters, symbols, and arithmetic expressions.

The price is \$55.00 from your local dealer or:

Software Concepts
P.O. Box 1112
Cupertino, CA 95015

LOWER-CASE FOR YOUR APPLE

Both Integer BASIC and Applesoft II can manipulate the ASCII codes for lower-case letters in string variables, but until now there has been no efficient way to display the results on the screen. The Lower Case Adapter (LCA) solves this problem. Its features include:

- Plugs in with no modifications to the APPLE. Easily removed if warranty service is needed for either the APPLE or the LCA
- Displays lower-case letters with descenders
- Sample software included for use with either BASIC
- No memory overhead as with firmware and software methods that utilize APPLE's HI-RES graphics
- Fully compatible with Disk-II DOS
- Compatible with text editors from Appleations Unlimited and Programma
- Compatible with most printers that have lower-case

The Lower Case Adapter does not interfere with any existing features of the APPLE or any of the standard software or firmware.

Price is \$49.95. For more information, or to order write:

Dan Paymar
P.O. Box A-133
S.C. 6800
Costa Mesa, CA 92627
or phone (714) 645-1411 after
6:30 p.m.

DISKETTE STORAGE

The SRW library cases provide minidiskette users with convenient and efficient access to floppies in envelopes. It is an excellent archival storage system with optimum protection against environmental conditions such as temperature, excessive humidity, moisture condensation and contaminants. The library case is an excellent safeguard for recorded information during shipping and storage.

For more information, see your local APPLE dealer or contact:

SRW Computer Components
Company
18009-D ky Park Blvd.
Irvine, CA 92714
(714) 557-7060

SELECTRIC INTERFACE

Looking for high-quality printing for your Apple? Then the Escon Interface System may be just what you need. By choosing one of the four available models, you can interface any Selectric to any micro or minicomputer.

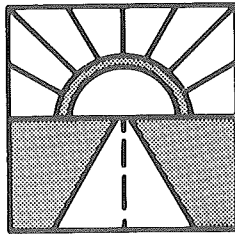
There are no permanent modifications to make to your Selectric and it can still be used as a typewriter.

Prices are:

S100	\$496.00
Parallel	\$525.00
RS232	\$549.00
IEEE-488	\$560.00

For more information, call or write:

Escon Products, Inc.
171 Mayhew Way, Suite 204
Pleasant Hill, CA 94523
(415) 935-4590



LOOKING AHEAD

Electronic Messages

It seems that the age of telephone communications has reached microcomputers. ABBS (Apple Bulletin Board Systems) are springing up all over. If your Apple has communication capability (a modem, etc.) then give one of these numbers a yell. If you have an ABBS, or know of one not listed here, drop us a note so that we can list it.

A.E.C.S.

Ft. Lauderdale, FL
(305) 566-0805

AKRON DIGITAL GROUP

Akron, OH
(216) 745-7855

COMPUTER COMPONENTS, INC.

Lawndale, CA
(213) 370-3160

COMPUTER COMPONENTS, INC.

Westminster, CA
(714) 989-1984

COMPUTER MERCHANT

San Diego, CA
(714) 582-9557

COMPUTER MART

Springfield, MO
(417) 862-7852

FORT WALTON BEACH

Destin, FL
(904) 243-1257

HAWTHORNE

Hawthorne, CA
(213) 675-8803

HOUSTON

Houston, TX
(713) 977-7019

KORSMEYER ELECTRONICS

Huntington Beach, CA
(714) 964-4346

MARINA DEL REY

Marina Del Rey, CA
(213) 821-7369

MIAMI

Miami, FL
(305) 821-7369

NEW YORK

Long Island, NY
(212) 448-6576

PEOPLES' MESSAGE SYSTEM

Santee, CA
(714) 449-5689

PERIPHERALS UNLIMITED, INC.

Signal Hill, CA
(213) 424-3506

PERSONAL COMPUTERS OF CHICAGO

Chicago, IL
(312) 337-6631

SAN ANTONIO

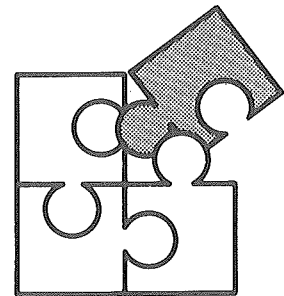
San Antonio, TX
(512) 657-0779

SAN FERNANDO VALLEY

Canoga Park, CA
(213) 340-0135

SAN FRANCISCO

San Francisco, CA
(415) 668-4246

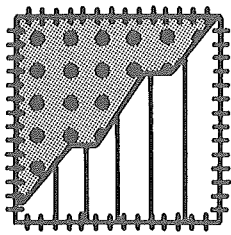


BITS AND PIECES

INVISIBLE WRITING

Some programs using HIRES graphics require the ability to plot on one page of graphics while displaying the other. This really isn't hard, in fact just a POKE will do it for you. (Note that before this will work you must use a HGR or an HGR2 command to initialize HIRES.)

To change the page HPLotted to, POKE 230,32 for page 1, and POKE 230,64 for page 2. This has no effect on which page is displayed, but changing that is just as simple. POKE - 16300,0 to display page 1, or POKE - 16299,0 to display page 2.



PATCHES AND PROGRESS

DOS Update for Dual Drive Users

DOS 3.2 has been shipping for some time now and, we are happy to report, has been remarkably bug-free. However, DOS users with two DISK II's on a single controller have reported problems. These problems usually manifested themselves as seemingly random "DISK I/O ERRORS." Often the copy program would fail outright or create a diskette that was unreadable. Since this was a sporadic problem, it was very difficult to track down.

What was found was that the read/write head was not always where DOS thought it was. Although DOS deselects a drive before seeking on the other drive, and the deselect is supposed to shut down the drive electronics, a filter capacitor on the drive has the effect of keeping the drive enabled for about 100 milliseconds after deselect. Thus, when reading and writing alternately to both drives, the head of the previously accessed drive can sometimes step itself as much as half a track off, while the other drive is stepping normally. When the drive is reselected to operate on the same track, DOS still trusts the head to be where it was, and this leads to the I/O errors. The solution we implemented was to wait 100 milliseconds before seeking, when the drive is powered up. Since powerup and seek time is substantial compared to the 100 millisecond delay, there is no loss in performance. Additionally, the copy

program has been changed to verify that each track is properly duplicated (this makes it slower but more reliable).

Congratulations to the lab engineers who found this elusive problem. Now comes the most important part, getting this correction out to you.

To do this, we have created a revision of DOS 3.2 entitled, appropriately enough, DOS 3.2.1. Your local Apple Level 1 Service Center now has a copy of this new release which works with both the Standard (Integer) and Plus (Applesoft) versions. It contains revised versions of the following:

1. DOS 3.2.1
2. Update 3.2.1
3. Copy

We suggest that Apple users operating two disks on the same controller obtain this version. For users with one disk, or with disks on separate controllers, there is no problem, and therefore, no need to get the change.

To get your current DOS 3.2 Diskette updated to 3.2.1, simply bring it to your local Level 1 Service Center (Note: you must bring the original master diskette, the one with the Apple DOS Label on it.) The Dealer will process your diskette, updating it with the versions listed above, and return it to you. Every effort will be made to do this within 24 hours of the time you bring it in. That's all there is to it. In the event that there is no convenient way for you to get your diskette to your Dealer's Service Center, you may mail it (be sure to pack it securely) to our Cupertino Service Facility. The address is:

Apple Computer Service,
20605 Lazaneo Drive,
Cupertino, California 95014,
Attention: DOS Update.

The updated disk will be mailed back as soon as possible.

Note: Nothing in this revision changes the documentation in the DOS 3.2 — Do's and Don'ts of DOS manual (A2L0012). It's still current and will remain current for any 3.2 series DOS release.

ERRATA

In CONTACT 4 we gave you an incorrect telephone number for Interactive Structures, Inc., the people who make an analog input card for the APPLE II. The correct number is (215) 382-8296.

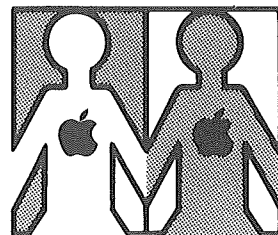
A couple of the Local User Groups listed in CONTACT 5 were wrong. They should be:

MARYLAND APPLE II USERS GROUP

Computer Unlimited, Inc.
907 York Road
Towson, MD 21204
Kevin Parks
(301) 321-1553

WISCONSIN APPLE USERS

c/o Cybernetic Mechanism
P.O. Box 11463
Milwaukee, WI 53211
Ken Blochowiak
(414) 964-6645



LOCAL USER GROUPS

Here is the new list of latest APPLE II User Groups. If we still don't have your group in our files, write or call us.

BRITISH COLUMBIA

APPLE BRITISH COLUMBIA
Ralph Dawson
2922 East 25 Ave.
Vancouver, B.C.

CALIFORNIA

APPLE USERS GROUP
c/o Computerland
1815 Ygnacio Valley Rd.
Walnut Creek, CA 94596

BYTE SHOP
4 West Mission St.
Santa Barbara, CA 93101
(805) 966-2638

CAROLINA

CAROLINA APPLE CORE
Wilbur Andrews
5212 Inglewood Ln.
Raleigh, NC 27609
(919) 787-3509

CONNECTICUT

APPLELIST
55 Pardee Place
New Haven, CN 06515
Marc Goldfarb
(203) 562-4907 (work)
(203) 397-1407 (home)

FLORIDA

MIAMI APPLE USERS GROUP
c/o David Hall, Sec.
2300 N.W. 135th St.
Miami, FL 33167

THE APPLE COMPUTER
ENJOYMENT SOCIETY
671 NE 56th Street
Fort Lauderdale, FL 33334
(305) 772-4768

KANSAS

APPLEBUTTER
10049 Santa Fe Dr.
Overland Park, KS 66212
(Last Wed. each month)

LOUISIANA

The B.R.A.N.C.H.
(BATON ROUGE APPLE NETWORK
OF COMPUTER HOBBYISTS)
4661 Tupello St.
Baton Rouge, LA 70808
(504) 924-0636
Allen Simpson

MICHIGAN

THE MICHIGAN APPLE
Computer Club
32905 W. 12 Mile Rd. Suite 320
Farmington Hills, MI 48018
(313) 979-5298

MISSOURI

APPLE JACKS
c/o Odel Small
P.O. 24202
St. Louis, MO 63130
MICRO & PERSONAL COMPUTER
CLUB OF ST. LOUIS
Futureworld, Inc.
12304 Manchester Rd.
St. Louis, MO 63131
(314) 965-4540

NEW YORK

THE MID HUDSON APPLE CORE
ASD Office Systems
Rt. 55 — Vanwyck Plaza
Poughkeepsie, NY 12603

APPLE BYTER'S CORP.
Buffalo Saving Bank
Sheridan-Harlem Branch,
Community Room
3980 Sheridan Dr.
Amherst, NY 14226
(3rd Fri. each month)

NEW JERSEY

APPLE USERS GROUP
c/o Computer Encounter
2 Nassau St.
Princeton, NJ 08540
(609) 924-8757

OHIO

DAYTON AREA APPLE USERS GROUP
c/o Computer Solutions
1932 Brown Street
Dayton, OH 45409

PENNSYLVANIA

THE COMPUTER HOUSE
1000 Greentree Rd.
Pittsburgh, PA 15220
(412) 921-1333

VIRGINIA

S.E. VIRGINIA APPLE ORCHARD
George Guild Jr.
117 Cardinal Drive
Hampton, VA 23664
(804) 850-0626 (home)
(804) 764-7081 (work)

WISCONSIN

ADAM & EVE, APPLE II USERS' GROUP
11 S. Handcock St.
Madison, WI 53703
(608) 256-5306

**WHAT'S NEW, APPLE?
(cont'd)****APPLE WRITER: A New
Way to Write from Apple
Computer Inc.**

Discover Apple Computer's new way to be more creative and efficient at practically anything you write. The Apple Writer uses all the advantages of the Apple computer and that saves you time. This new product accomplishes typographical error correction, file editing and document revisions quickly with minimal effort. That's important to any creative thinker.

By entering text on the keyboard of the Apple Computer, you see it displayed on the monitor. Easy retrieval of your files from the diskettes, allows for effortless text corrections or revisions.

Features

Character-oriented rather than line-oriented text editing permits easier editing.

Editing feature permits three methods of deletion of text (character, word and paragraph) and two methods of insertion of text (character and file). Cursor Control Mode allows easy movement throughout the text. Moves blocks of text within a document, two easy ways.

Stores documents easily on floppy disks with up to 95 pages of text per diskette. Any length document can be printed using the load and continue printing feature.

Allows partial documents to be saved to separate disk files, and recalled later for insertion into other documents.

Printer Commands include: left or right justify, fill-justify or centering. Also sets left, right, top and bottom margins; line length of page, line spacing, page numbering and page heading. Many of these commands may be embedded on your text allowing dynamic formatting.

Recovers automatically from system errors to protect documents.

Permits check of length of unused working file space (document in memory).

Permits use of DOS commands from editor, allowing you to catalog or delete files stored on diskette.

Has Global search and replace, allowing replacement of any characters or words throughout a document.

Displays up to 24 lines of 40 characters of text, with upper case shown as inverse characters.

**Minimum Hardware
Requirements**

Apple II or Apple II Plus with 48K RAM

One Disk II required (second drive optional)

Monitor or TV Screen

Apple Writer has too many features to explain here. Ask your dealer for a demonstration. Suggested Retail Price is \$75.00.



Dollars and Cents

This program (and the subroutine at lines 2000 through 2060) will format your numeric output into a "Dollars and Cents" format. It's simple and fairly fast. An advantage to using this subroutine is that it does very little string manipulation. This means that the dreaded "garbage collection" will occur less often than with other methods!

LIST

```

100 REM      PRINT USING
110 REM
120 REM      SIMULATOR
130 REM
140 REM      AUG 79
150 REM
160 REM      J. CROSSLEY
170 REM

180 LET N = 2: REM SET NUMBER
190 REM      OF DECIMALS
200 LET S = 5: REM SET FIELD
210 REM      WIDTH
220 HOME
230 FOR X = - 5 TO 5 STEP .501
240 PRINT X, "$";
250 GOSUB 2000
260 PRINT
270 NEXT X
280 PRINT
290 PRINT "UNFORMATTED      FORMA
      TTED"
300 END

1000 REM THIS IS THE FORMATTING
1010 REM SUBROUTINE. THE INPUT
1020 REM IS 'X', 'N', AND 'S'
1030 REM X IS THE NUMBER TO BE
1040 REM      BE PRINTED
1050 REM N IS THE NUMBER OF
1060 REM      DIGITS RIGHT OF '.'
1070 REM S IS THE WIDTH OF THE
1080 REM      RIGHT JUSTIFIED
1090 REM      PRINTING FIELD
1100 REM
2000 X$ = " " + STR$ ( INT (X *
      10 ^ N + .5))

```

```

2010 Q = LEN (X$) - ( VAL (X$) <
      0)
2020 PRINT SPC( S - Q * (Q > N +
      1) - (N + 2) * (Q < = N + 1
      ));
2030 PRINT MID$ (X$, 1 + ( VAL (
      X$) < 0), (Q < = N) + (Q - N
      ) * (Q > N));
2040 PRINT MID$ ("0.00", 1 + ((N
      + 1) < Q), 1 + (N - Q + 2) *
      (Q < N + 2));
2050 PRINT RIGHT$ (X$, N * (Q >
      N) + (Q - 1) * (Q < = N));
2060 RETURN

```

]

Literal Input

Here is another GC (garbage collection) forestaller with some nice additional benefits. It allows you to enter commas, quotes and colons into Applesoft without getting an "EXTRA IGNORED" error for your efforts and works just as well for either keyboard or disk input. Here's what it does.

- Line 100 defines a string variable at a known memory location. (This name can be anything you wish. We just happened to use IN\$.)
- Lines 220-290 poke a short machine language routine into page 3 of your Apple's memory. This routine changes the pointer to the string in memory to point at the Input Buffer (\$200).
- Line 350 calls the new input routine and the MID\$ function moves a copy of the new string into main memory so that it isn't overwritten by the next input.

Here's a cute trick for using this routine with random access disk files. Say your program is reading a file for the third field in each record. Using this routine, the syntax for that would be:

```
CALL 768: CALL 768: CALL 768: IN$ = MID$(IN$, 1)
```

The first two calls are dummy INPUTs but, unlike the normal DOS "INPUT IN\$" command, perform no string operations.

Try it. You'll like it.

LIST

```

100 LET IN$ = "X"
110 TEXT : HOME
120 REM
130 REM THE FIRST VARIABLE
140 REM DEFINED MUST BE A STRING

150 REM THIS STRING WILL REC'VE
160 REM INPUT FROM THE CALL
170 REM

```



```

180 REM THIS POKES THE INPUT
190 REM SIMULATOR ROUTINE
200 REM INTO MEMORY...
210 REM
220 FOR J = 768 TO 788
230 READ I
240 POKE J, I
250 NEXT J
260 DATA 162, 0, 32, 117, 253, 160, 2
270 DATA 138, 145, 105, 200, 169, 0
280 DATA 145, 105, 200, 169, 2, 145
290 DATA 105, 96
300 REM
310 REM NOW TO USE IT!
320 REM
330 PRINT "TYPE IN ANY CHARACTER
S YOU WISH:"
340 PRINT
350 CALL 768: IN$ = MID$ (IN$, 1)

360 REM
370 REM THIS IS AN "INPUT IN$"
380 REM BUT IGNORES ", " & ":"
390 REM
400 PRINT
410 PRINT "AND HERE'S WHAT YOU T
YPED IN:"
420 PRINT : PRINT IN$
430 PRINT
440 PRINT "NOTE THAT EVEN QUOTES
, COMMAS AND"
450 PRINT "COLONS GET THROUGH UN
SCATHED."
460 PRINT : PRINT "NOW LET'S WRI
TE IT TO THE DISK."
470 PRINT CHR$ (4)"OPEN TEMP"
480 PRINT CHR$ (4)"WRITE TEMP"
490 PRINT IN$
500 PRINT CHR$ (4)"CLOSE"
510 PRINT : PRINT "AND READ IT B
ACK IN..."
520 LET IN$ = " "
530 PRINT CHR$ (4)"OPEN TEMP"
540 PRINT CHR$ (4)"READ TEMP"
550 CALL 768: IN$ = MID$ (IN$, 1)

560 PRINT CHR$ (4)"CLOSE"
570 PRINT : PRINT IN$
580 PRINT : PRINT "TA-DAA!!": END

```

J

Restore to Line Number

We've had some questions from people asking how to do a RESTORE statement to a particular line number. It's really not too difficult. The next program is a quick demonstration of how to do this.

```

JLIST
0 DATA ZERO
1 DATA ONE
2 DATA TWO
3 DATA THREE
4 DATA FOUR
5 DATA FIVE
6 DATA SIX
7 DATA SEVEN
8 DATA EIGHT
9 DATA NINE
10 REM
11 REM THESE ARE THE DATA LINES
12 REM
1000 REM THESE POKES ENTER THE
1010 REM RESTORE PROGRAM INTO
1020 REM MEMORY
1025 REM
1030 POKE 768, 201: POKE 769, 82: POKE
770, 208: POKE 771, 38: POKE 7
72, 32: POKE 773, 177: POKE 77
4, 0: POKE 775, 32: POKE 776, 1
03:
1040 POKE 777, 221: POKE 778, 32: POKE
779, 82: POKE 780, 231: POKE 7
81, 32: POKE 782, 26: POKE 783
, 214: POKE 784, 144: POKE 785
, 8:
1050 POKE 786, 160: POKE 787, 4: POKE
788, 177: POKE 789, 155: POKE
790, 201: POKE 791, 131: POKE
792, 240: POKE 793, 3: POKE 79
4, 76:
1060 POKE 795, 124: POKE 796, 217:
POKE 797, 165: POKE 798, 155:
POKE 799, 164: POKE 800, 156:
POKE 801, 56: POKE 802, 233: POKE
803, 1:
1070 POKE 804, 32: POKE 805, 80: POKE
806, 216: POKE 807, 76: POKE 8
08, 166: POKE 809, 217: POKE 8
10, 96
1075 REM
1076 REM THESE POKES SET '&' TO
1077 REM JUMP TO THE RESTORE
1078 REM PROGRAM
1079 REM
1080 POKE 1013, 76: POKE 1014, 0: POKE
1015, 3
1084 REM
1085 REM THESE POKES ENTER THE
1086 REM ONERR FIX FROM PAGE 82
1087 REM INTO MEMORY
1088 REM
1090 POKE 810, 104: POKE 811, 168:
POKE 812, 104: POKE 813, 166:
POKE 814, 223: POKE 815, 154:
POKE 816, 72: POKE 817, 72: POKE

```

```

818,152: POKE 819,72: POKE 8
20,96
2000 REM
2010 REM SET UP ONERR AND START
2020 REM THE MAIN PROGRAM
2030 REM
2040 ONERR GOTO 3030
2050 LIST 0 - 9
2060 INPUT "WHICH LINE DO YOU WA
NT ?";LN
2070 &:RLN
2080 REM
2090 REM LINE 1130 IS DOES A
2100 REM 'RESTORE TO LINE LN'
2110 REM
2120 READ A$
2130 PRINT
2140 PRINT "AND THE DATA IS... "
;A$
2150 PRINT
2160 GOTO 2050: REM DO IT AGAIN
3000 REM
3010 REM ERROR HANDLER
3011 REM
3012 REM '&' ALONE EXECUTES THE
3013 REM ONERR FIX
3020 REM
3030 IF PEEK (222) = 90 THEN PRINT
: PRINT "THAT'S NOT A DATA L
INE!"; CHR$ (7): & : GOTO 20
50
3040 REM
3050 REM THIS IS FOR
3060 REM UNDEFINED STATEMENT
3070 REM
3080 IF PEEK (222) = 254 THEN PRINT
: PRINT "TRY TYPING A NUMBER
!"; CHR$ (7): & : GOTO 2050
3090 REM
3100 REM THIS IS FOR
3110 REM BAD RESPONSE TO INPUT
3120 REM
3130 REM IF NOT ONE OF THE
3140 REM ABOVE ERRORS THEN END
3150 END

```

J

What's In This System, Anyway?

This last program (CONFIG), does a quick look at the machine language code, if any, located in your Apple's I/O slots. Since this code is different for each peripheral, it's possible to tell just what interface card is in a particular slot.

The bytes being read are \$Cn05 and \$Cn07, where n is the slot number. For instance, these bytes both contain \$48 (72 decimal) for an Apple Parallel Printer Interface.

ILIST

```

100 REM THIS PROGRAM FIGURES
110 REM OUT WHAT CARDS YOUR
120 REM APPLE HAS IN WHICH
130 REM PERIPHERAL SLOT.
140 REM
150 REM THIS IS DONE BY THE
160 REM PROGRAM LOOKING AT
170 REM THE CODE IN AN ON-
180 REM BOARD ROM AND DOING
190 REM A QUICK CHECK ON A
200 REM FEW BYTES
210 REM
220 TEXT : HOME : PRINT : PRINT
" SYSTEM CONFIGURATION (
CONFIG)": PRINT
230 DIM S$(4),S7(4):DISK = 1:COM
= 2:SERIAL = 3:PTR = 4
240 DATA 3,60,24,56,56,24,72,72
250 FOR I = DISK TO PTR: READ S$
(I),S7(I): NEXT
260 DIM NA$(4)
270 LET NA$(DISK) = "DISK CONTRO
LLER"
280 LET NA$(COM) = "COMMUNICATIONS"
290 LET NA$(SERIAL) = "H. S. SER
IAL"
300 LET NA$(PTR) = "PARALLEL PRI
NTER"
310 DIM CS(2)
320 LET C100 = 49408
330 LET C700 = 50944
340 FOR S = C100 TO C700 STEP 256
350 FOR K = 0 TO 2
360 LET CS(K) = 0
370 FOR I = 0 TO 255 STEP 8
380 LET CS(K) = CS(K) + PEEK (S
+ I)
390 NEXT : NEXT
400 IF CS(0) < > CS(1) OR CS(1)
< > CS(2) OR CS(2) < 256 OR
CS(0) < 256 OR CS(1) < 256 THEN
470
410 PRINT "SLOT NO. "(S - 49152)
/ 256" HAS A";
420 FOR I = DISK TO PTR
430 IF PEEK (S + 5) = S$(I) AND
PEEK (S + 7) = S7(I) THEN PRINT
" "NA$(I);: I = 99
440 NEXT I
450 IF I = 5 THEN PRINT "N UNKN
OWN";
460 PRINT " CARD": GOTO 480
470 PRINT "SLOT NO. "(S - 49152)
/ 256" IS EMPTY"
480 NEXT : END

```

J